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ABSTRACT

Five methods of combining the average compensations reported by the American Association of University Professors for each academic faculty rank were examined to produce a single summary statistic that will represent the average faculty compensation at a given institution. Ten member institutions of the Association of American Universities were selected for analysis for 1977-78 and for 1971-72. The use of weights based on the number of faculty at each rank was found to be less satisfactory than a simple average of the average compensations in assessing relative standing among peer institutions and in measuring compensation increases over time. (Author/SW)

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INTER-INSTITUTIONAL COMPARISONS OF FACULTY COMPENSATION

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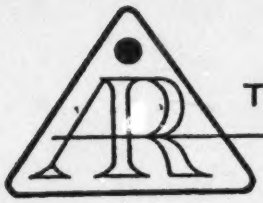

THE ASSOCIATION FOR INSTITUTIONAL RESEARCH

This paper was presented at the Twentieth Annual Forum of the Association for Institutional Research held at the Peachtree Plaza Hotel in Atlanta, Georgia, April 27 - May 1, 1980. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum papers.

Mary Corcoran
University of Minnesota
(Editor, AIR Forum Publications)

ABSTRACT

An examination is made of five methods of combining the Average Compensations reported by AAUP for each academic rank to produce a single summary statistic that will represent the Average Faculty Compensation at a given institution. The use of weights based on the number of faculty at each rank was found to be less satisfactory than a simple average of the average compensations in assessing relative standing among peer institutions and in measuring compensation increases over time.

INTER-INSTITUTIONAL COMPARISONS OF FACULTY COMPENSATION

In the era of growing enrollments and increasing needs for new faculty, faculty salaries were often determined by competitive bidding among institutions. Now that the academic marketplace has stabilized, faculty are directing their attention toward "equity", which is frequently defined as keeping up with inflation or as maintaining a specified ranking within a group of peer institutions.

The best and most accessible data available for comparative studies are published by the American Association of University Professors in their Annual Report on the Economic Status of the Profession. The purpose of this paper is to share with you one university's experiences using that report. Even those universities who use other data sources are likely to find it necessary to reconcile their analyses with those published by AAUP.

By listing salary and other related information for individual institutions, the AAUP permits you to select your own comparison group, but it also provides some ready-made analyses and summary statistics on several sub-populations. The most important of these are the ratings of average compensation at each of the academic ranks. After categorizing the institutions according to the number and type of degrees awarded, the average compensations of each academic rank are tabulated in decending order. Rating 1 is given to the institutions in the top 20%, Rating 2 to the second quintile, etc. These ratings are included in the institutional listings and serve as a gross but useful comparative measure. It is not uncommon for a university to base its salary policy on the attainment or maintenance of a particular rating, but to do so is to accept all reporting institutions

within the category as one's peer comparison group. A very unpleasant exchange of accusations and counter charges occured at USC when a three year goal (Rating 1 of Category I for full professors) was attained in one year. An announcement to that effect was greeted with surprise by this analyst, some modest gloating by the administration and active disbelief by the faculty. A detailed examination of the top paying institutions led to a lengthy report by Institutional Studies, but we were scooped by the Faculty Newsletter, which printed the tabulation shown in Exhibit 1.

Insert Exhibit 1 about here

The above analysis ignores an abrupt and unannounced increase in the number of Category I institutions and the fact that the centile ratings of the lower three ranks were virtually unchanged. Numerous other deviations and internal inconsistencies were noted but the major controversy centered on the computation of the "Average".

The time and difficulties involved in monitoring 200 institutions gained acceptance for using our fellow AAU members as our peer comparison group. To meet the need for a single summary statistic a "3-Rank Average" was computed for each institution by weighting the average compensation of each rank according to USC's rank distribution. The next edition of the Faculty Newsletter contained Exhibit 2. Obviously, I had not solved the "average" problem.

Insert Exhibit 2 about here

The so called "AAUP Actual" refers to the AAUP "All Ranks" average which is the simple mean of the reported salaries and fringe benefit costs of all faculty irrespective of academic rank and including Lecturer. The AAUP warns the user that year to year comparisons between "All Ranks" averages may be misleading because the weights (i.e., the number of faculty) assigned to the ranks usually vary between years. This caution is also applicable to the user wishing to compare the average compensation of one institution with that of another with a different mix of faculty ranks.

Table 1 illustrates an interpretational hazard of using the AAUP All Ranks Average as a comparative measure. In 1977-78 the All Ranks Averages was $26,004 at USC, $26,027 at Illinois, and $27,337 at Duke. However, the average compensation of each of the four academic ranks for which data are published is considerably higher at USC than at either Duke or Illinois. This is accounted for by the differences in the rank distributions of the universities.

Insert Table 1 About Here

The AAUP All Ranks Average is a measure of a university's average expenditure per faculty but may not be the best comparative measure of the average compensation received by faculty. Certainly the individual faculty member at any given rank at Duke or Illinois would prefer to receive the average compensation provided for that rank at USC and is not personally enriched financially by the knowledge that Duke and Illinois support more people at the upper ranks.

This paper examines five methods of combining the published data to create an institutional average compensation that will reflect the relative economic well-being of the individual faculties and provide a measure by which one can assess changes from one year to another.

Procedure

Ten member institutions of the Association of American Universities (AAU) were selected to illustrate the results of five methods of computing a 3-Rank Average from data published by AAUP. The Instructor rank was ignored because of the relatively small number of cases (fewer than 5% of the AAU faculty) and because of observed differences among and within universities in the definition and frequency of use of the title "Instructor". AAUP does not provide data for Lecturers.

The average compensations reported by the institutions for the three professorial ranks were multiplied by each of the following sets of weights, summed, and divided by the sum of the weights to create a 3-Rank Average for each institution.

University Weights - the number of faculty at each rank at each university. These weights vary from one university to another and from year to year. The resulting 3-Rank Average is identical to the AAUP All Ranks after substracting the Instructors and Lecturers.

USC Weights - the number of people at each rank at USC. This procedure represents traditional institutional research practice of organizing the data from other universities to confrom with the structure of the home institution. The weights are constant for all universities in any given year but vary from one year to another. USC's rank distribution is fairly balanced.

UC Weights - the number of people at each rank in the University of California system. UC was chosen to illustrate the effects of a skewed rank distribution. Constant for all universities in any given year, the UC weights have changed over time.

AAU Weights - the total number of people at each rank in all AAU institutions. These weights were choosen as a neutral figure less subject to charges of manipulating the data.

Equal Weights - a simple average of the average compensations reported for each rank, which assumes an equal number of faculty at each rank for every year.

The 3-Rank Average Compensations were computed for 1977-78 and for 1971-72. The percentages of faculty at each rank (which are the University weights within rounding error) are shown in Table 2 for both years.

Insert Table 2 About Here

Results

Table 3 shows the computed 3-Rank Average compensations and the reported Rank Average compensations for 1977-78 at each university. The relative standing of each university in the comparison group is shown for each measure.

Insert Table 3 About Here

Although the dollar values of the computed 3-Rank Averages differ according to the weights used, the conclusions one would draw about relative standings within the comparison group are quite similar. Where the University Weight standings differ from the others (Virginia, Duke, USC) they are a less valid representation of the relative standings of the component Rank Averages. One may conclude that any method of weighting is a satisfactory comparative measure as long as the weights are the same for each university.

Increases in compensation over time are frequently compared to cost-of-living indices to demonstrate real improvement or decline in faculty economic status. The method used to compute the 3-Rank Average has an important effect on the resulting percentage increases. To illustrate this effect, 1971-72 3-Rank Averages were computed to parallel those shown in Table 3 for 1977-78. The percent of increase from

1971-72 to 1977-78 is shown in Table 4 for each 3-Rank Average and for the individual professorial ranks.

Insert Table 4 About Here

The increases based on University weights continue to perform erratically and are comparable from one university to another only when the rank distributions are in conformity. For example, increases in the Rank Averages at North Carolina and Rochester are nearly identical, but the increases of the 3-Rank Averages based on University weights are 36% and 31%, respectively. This is because North Carolina has experienced an increase in the number of full Professors while the rank distribution at Rochester was stable for the two years in question.

The increases based on USC Weighted Averages are the lowest shown because USC has had a slight shift toward assistant professors in its rank distribution. The increases based on UC Weights are higher than those based on AAU Weights because the degree of rank escalation is greater at UC than for the AAU as a whole. Both methods tend to suggest a rate of increase greater than that enjoyed by faculty within the professorial ranks.

The increases based on Equal Weights eliminate the effects of changing rank distributions. By simple visual inspection these also appear to be more closely related to the increases in the Rank Averages reported by the universities.

It should be noted that in all prior references to weights it would have been more precise to refer to nominal or apparent weights.

The actual weights of the Rank Averages in computing the 3-Rank Average is a function of the variances and covariances of the Rank Averages within the comparison group. In the AAU the variance of Professor compensation is much greater than that of Associate and Assistant. As a result, 57% of the variance of the "equal weights" 3-Rank Average for 1971-72 is accounted for by the Professor Average. Some users might find it desirable to standardize and/or normalize the Rank Averages prior to combining them.

Discussion

The validity of a particular statistic is related to the use to be made of the data. If one is making a financial analysis, e.g., the ratio of average faculty compensation to tuition income at several institutions, it would be correct to weight the Rank Averages given by AAUP by the actual number of faculty at each institution. If one is comparing the relative income of faculty at several institutions, one should distinguish between the compensation policies and the appointment/promotion policies of the institutions. Table 1 illustrates the problems that arise when the two concepts are confounded.

One can isolate the effects of varying rank distributions by assuming a uniform number of faculty at each rank for all comparison institutions. Using the rank distribution of the home institution has the advantage of producing a "real" figure that can be related to the budgetary process of that institution, but virtually any reasonable set of weights will result in very similar conclusions about relative standing within the comparison group. Weighting the Rank Averages by the average rank

distribution of the total comparison group is a neutral method of bringing all institutions into conformity for any given year, but introduces data aquisition and computational chores that could become important if one has a large comparison group or more than one.

Using the rank distribution of the home institution or of the comparison group will also present problems in evaluating the degree of increase in faculty compensation from one year to another unless the rank distributions are the same for both years. Computing an increase that fails to hold constant the rank distribution weights will overestimate the increase actually received by the faculty in the many universities that have experienced rank escalation in recent years.

The selection of a method of computing an institutional Average Compensation can be a political as well as a statistical decision. Generally, an administrator seeking to document faculty affluence will prefer a method that encompasses the effects of rank escalation. The faculty, however, may justifiably challenge a method that creates a sum greater than its parts. Giving equal weight to each rank every year is an objective method of computing institutional averages that will reflect the compensation policies of the institution and isolate promotion/appointment policies for an independent examination.

EXHIBIT 1*

USC FACULTY SALARY RANKING DECLINES

Number of Universities Paying More than USC

	1975	1976
Professor	45	41
Associate	34	38
Assistant	14	24
Instructor	15	33
Average	27	34

EXHIBIT 2*

USC Average Faculty Compensation Rankings within AAU

Source	1976	1977
OIS Report	19	10
AAUP Actual	25	23

*Excerpted from the Faculty Newsletter

Table 1

1977-78 Average Compensation and Rank Distribution
(Compensation reported to nearest $100)

Average Compensation	USC	Illinois	Duke
All Ranks	$26,0	$26,0	$27,3
Professor	$34,0	$32,2	$33,3
Associate	$25,1	$22,9	$23,8
Assistant	$20,7	$19,2	$18,7
Instructor	$17,2	$15,4	$15,4
Rank Distribution			
Professor	33%	47%	49%
Associate	29%	29%	30%
Assistant	33%	23%	20%
Instructor	4%	1%	1%

Table 2

Rank Distribution

	1971-72			1977-78		
	P	AP	aP*	P	AP	aP
UC System	43%	22%	35%	52%	25%	24%
Illinois	39	28	33	47	29	24
Michigan	50	25	25	56	24	20
N. Carolina	37	29	34	47	29	24
Virginia	34	28	39	33	29	38
Chicago	51	19	30	55	22	23
Duke	46	29	25	50	30	20
Harvard	60	12	28	62	11	26
Rochester	41	23	36	41	24	35
USC	37	29	34	34	30	36
All AAU	41%	27%	32%	46%	27%	27%

*P=full Professor; AP=Associate Professor; aP=Assistant Professor

Table 3

1977-78 Faculty Compensation
(to nearest $100)

	3-Rank Averages					Rank Averages		
	Univ Wgts	USC Wgts	UC Wgts	AAU Wgts	Equal Wgts	P	AP	aP*
UC System	$29,3	$27,0	$29,3	$28,6	$27,0	$35,4	$25,0	$20,7
Illinois	26,4	24,8	26,8	26,2	24,8	32,2	22,9	19,2
Michigan	29,9	27,1	29,3	28,6	27,1	35,0	25,6	20,8
N. Carolina	26,7	25,1	27,1	26,5	25,1	32,3	23,5	19,5
Virginia	25,7	26,0	28,5	27,8	26,1	34,8	25,1	18,4
Chicago	30,8	27,8	30,4	29,6	27,8	37,2	25,5	20,7
Duke	27,5	25,2	27,5	26,8	25,3	33,3	23,8	18,7
Harvard	33,2	28,0	31,5	30,4	27,9	40,9	23,8	19,1
Rochester	26,8	26,2	28,4	27,7	26,2	34,2	24,8	19,6
USC	26,6	26,6	28,6	28,0	26,6	34,0	25,1	20,7
Relative Standing								
UC System	4	4	4	3	4	3	5	2-4
Illinois	9	10	10	10	10	10	10	7
Michigan	3	3	3	4	3	4	1	1
N. Carolina	7	9	9	9	9	9	9	6
Virginia	10	7	6	6	7	5	3-4	10
Chicago	2	2	2	2	2	2	2	2-4
Duke	5	8	8	8	8	8	7-8	9
Harvard	1	1	1	1	1	1	7-8	8
Rochester	6	6	7	7	6	6	6	5
USC	8	5	5	5	5	7	3-4	2-4

*P=full Professor; AP=Associate Professor; aP=Assistant Professor

Table 4

Compensation Increases
1971-72 to 1977-78

	3-Rank Averages					Rank Averages		
	Univ Wgts	USC Wgts	UC Wgts	AAU Wgts	Equal Wgts	P	AP	aP*
UC System	62%	53%	62%	59%	56%	51%	58%	62%
Illinois	42	34	42	39	36	37	33	36
Michigan	43	37	45	42	39	41	39	36
N. Carolina	36	28	36	33	30	28	31	33
Virginia	31	30	39	36	32	30	37	29
Chicago	38	33	42	39	35	35	33	36
Duke	36	32	40	37	34	32	35	36
Harvard	42	33	46	41	34	45	25	27
Rochester	31	29	37	34	31	29	31	34
USC	48	48	57	54	50	52	48	48

*P=full Professor; AP=Associate Professor; aP=Assistant Professor